A SciCode Web Site: Building Bridges between Owners and Users

Cheryl Gaver
Atomic Energy of Canada Limited
2251 Speakman Drive
Mississauga, Ontario, L5K 1B2

ABSTRACT

Web technology is a tool that is gaining in popularity. Properly used, it is a powerful tool that has tremendous potential for providing better communication. It can also be effective as a training tool, an information-sharing tool, and as a means of simplifying work load, and facilitating compliance with Company procedures.

The issue is one of communication. The challenge facing many large or geographically-distributed companies is how to communicate information to their staff and to their customers. Procedures overseeing quality-assurance programs and commitment to ensuring the quality of products need to be communicated to customers. Equally important is customer feedback. This information from users becomes the kernel for future product development.

The issue is even more important when speaking of scientific analysis computer programs (SciCodes). Regular ongoing communication between Primary Holders and End Users is essential in the development and use of SciCodes. Without this communication, quality assurance is at risk. Quality assurance processes are an integral part in developing any SciCode. End Users also have a role to play. Primary Holders keep End Users informed of improvements or new releases. End Users must ensure they act on this information. Equally important, End Users must communicate problems or suggestions to the Primary Holder to remedy or incorporate in new releases. In other words, quality assurance processes become most effective when both Primary Holder and End Users are involved. This requires communication.

Web technology offers AECL a means of providing regular, ongoing communication between its scientific-code (SciCode) Primary Holders-Owner Branches and the End Users of these codes within and outside the Company. Using the experience we have gained by developing the Y2K SciCode Web sites, setting up online documentation systems, and incorporating lessons learned from the Y2K project we have developed a model that is geared to bridging the communication gap between the Owners and Users of SciCode. This model has also been designed to be interactive, allowing it to involve users in many aspects of SciCode quality assurance (SQA), and even in the development of SciCodes.

This paper looks at some of the ways AECL is using Web technology with respect to its SciCodes. It briefly describes the background, vision, requirements, capabilities, and future direction of some of the SciCode Web pages currently existing or under development at AECL.

INTRODUCTION

Picture yourself as a new user of a Scientific Analysis Computer Program (SciCode). You have been told which program to use, whom to contact for information about the program, and have been given a thick reference manual. You need to know some basic, general information about the program's capabilities but cannot find it. Your contact is away for the week, so you do the best you can. If only there were one central spot where you could pull up general information on the program, including its development history, check its capabilities, or find out about upcoming training sessions with a simple click of the button. If only there were one central spot where you could retrieve major documentation, see who is developing or qualifying the program, read about its limitationss or any problems with the SciCode that have been reported. If only there were one starting point that could give you what you needed about the SciCode, give you opportunity to offer suggestions for future development, and perhaps even direct you to the executable itself so that you could actually run the program!

This paper describes how we, at AECL, are implementing Web technology with respect to our SciCodes. It briefly describes the background, vision, requirements, capabilities and future direction of some of the SciCode Web sites currently existing or under development at AECL.

BACKGROUND

AECL has had a Web site for one of its major SciCodes, Canadian Algorithm for Thermalhydraulic Network Analysis (CATHENA), for a number of years. It was developed to support internal customers, but is also used to support non-AECL CATHENA users around the globe, and has become the model for subsequent SciCode Web sites.

Until recently, however, CATHENA was the sole AECL SciCode Web site. Our recent experience on Y2K demonstrated that something comparable to the CATHENA site was desirable for other major SciCodes at AECL.

As part of the Y2K initiative, the SciCode team was responsible for co-ordinating activities relating to over 400 different SciCodes and multiple versions of these programs. Procedures were implemented, evaluations and remedial actions were completed, and external customers were kept abreast of Y2K activities. One of the daunting challenges that confronted the Y2K team was how to manage communication between the code developers (Primary Holders-Owner Branches) and the code users (Projects and various groups actually using the program within AECL). Traditional methods of communication such as memos, general notices, and even e-mails could too easily be buried or, once issued, be lost. The Y2K team wanted to give people a convenient means of accessing current information. To address this concern, we published Y2K updates on the Y2K SciCode Web site, and distributed the link to the site by e-mail.

As the Y2K project ended and the Y2K team assessed what lessons were learned, we recognized the need for better ongoing communication between SciCode owners and users, and realized that Web technology, properly used, could be the solution.

We noticed that the Y2K SciCode project had sometimes run into difficulties where users had incomplete or erroneous background information about programs they were using. In some cases the individual identified as "Primary Holder" for the SciCode had long since been transferred to

2

other branches or had even retired. In other cases, "Owner Branches" no longer existed under the name provided by the project; Company reorganization had often resulted in renaming the branches. Similarly, Primary Holders knew which groups were using their programs, but were often unaware of specific individuals. These were not an issue for major SciCodes, which are used throughout the life of a project, but were at times discovered to exist for less important and less frequently-used programs.

AECL has a well-developed system of software quality controls and configuration management, and is fully committed to ensuring the quality of its SciCodes. What was missing was a way to ensure that users within and external to AECL were kept abreast of developments, modifications, and changes to our SciCodes. In other words, the Y2K SciCode team identified a communication gap between owners and users, and developed a way to bridge that gap. AECL's Code Management Panel and Code Centre also acknowledged that ongoing communication between the various groups was as important as ensuring quality-development for its SciCodes and accepted responsibility for continuing the work begun by the Y2K SciCode team of encouraging, and facilitating such communication.

The Reactor Core Physics Branch decided to create a Web site for each of its major SciCodes. With this goal in mind, the Branch reviewed the layout and content of the CATHENA Web site, and used it as the blueprint for the development of our subsequent Web sites.

VISION

People and companies often have misconceptions about the use of Web technology. They may feel that money and developing sites that are visually appealing will somehow accomplish whatever they are trying to accomplish. What they fail to realize is that Web technology is a tool and not a solution in itself. Web sites that communicate very little, are time-consuming to load. If they are difficult to navigate, they are ultimately useless.

To be effective, Web sites require planning with respect to content and organizational layout. What is to be communicated? How will it be communicated? How will the site be organized to facilitate the intended communication? How will people navigate through the site to find what is being communicated? How will we determine whether we are communicating effectively? In other words, the purpose of any single Web site needs to be clarified from the very beginning.

We at AECL acknowledged the potential that Web technology offered: potential for communication, marketing, code documentation, code execution, code development, management, and training. We also acknowledged several constraints: the limited resources, the number of different SciCodes used by AECL, and the desire to publish well-defined sites without undue delay.

Given the need that had been defined, and recognizing the potential offered by Web technology, and the constraints under which we would be working, we clarified our vision of what we were trying to do.

What was the problem we were trying to address? A communication gap existed between owners and users of many SciCodes at AECL. It needed to be bridged better than it had been.

What did we think we could accomplish with a Web site? We believed that a Web site would provide the means of posting current, easily accessible information for users.

These answers became the basis for our mission statement: **The primary purpose of the new Web site is to provide required information for people who need it when they need it, and in a form that they can easily retrieve and use.**

In addition, secondary purposes were also identified:

a) a repository of SciCode documentation (including feedback from users and requests for changes);

b) training on how to use the SciCode;

c) marketing the SciCode to potential clients.

These purposes were considered in planning the layout of the site. Anything relating to the primary purpose would be incorporated into the site from the very beginning. Anything relating to the secondary purposes would be planned for in the organization of the site, but would not be included in the initial phase.

*What were we **not** trying to accomplish?*

- We were not creating our own document management group, or developing our own methods of providing configuration management of the program.

- We were not by-passing AECL's procedures for ensuring quality and integrity of its products, or for protecting its intellectual property.

- We were not developing Web pages for all of AECL's SciCodes at this point; rather we were focusing on SciCodes that were Industry-Standard Tools (IST) or were deemed critical to AECL's business.

As we began to develop our Web site, we realized that much of we wanted to include was dynamic information, or information that was frequently updated. This information had to be current. The best way to ensure this was to create a database that would be regularly updated. Visitors to the site would access current information through Web-based queries of the database. Once we realized how much the information needed to be dynamic, we realized how much we needed to create an interactive Web site. Gradually, we discovered the potential that such a site could offer: it would be the means by which we would capture information *from* users as well as provide information *to* users. Ontario Power Generation Inc. (OPGI) showed us a Web-based document they had developed for one of our SciCodes, Reactor Fuelling Simulation Program (RFSP). This gave us new ideas as to how we could transform our site from being a means of bi-lateral communication to also becoming an information repository with the need for information management.

What criteria would be used to evaluate the success or failure of the Web site?

This was difficult to define quantitatively. How does one assess *improved communication* in measurable terms?

To maintain communication, we rely on a continuous series of events—such as e-mails, telephone calls, conversations, memos, meetings, etc., that may be missed or delayed. Although no one objects to any of these events if a matter is urgent, we all know they are time-consuming; we know that interruptions reduce productivity   Conversely, Web sites allow visitors to access information at their convenience, without having to send an e-mail, make a telephone call, stop by for a chat, send a memo, or call a meeting. Improved communication could therefore be defined and measured as the reduction in the number of telephone calls and e-mails, combined with the increased use of various Web forms, such as feedback and nonconformance forms.

In developing our first SciCode Web site, we discovered other possibilities that are related to AECL's SQA program and that might provide other criteria for determining the effectiveness of our site.

To date, we continue to focus on bridging the communication gap between code developers and code users. We continue to use the CATHENA Web site as the model for our Web sites and communicate regularly with the CATHENA group to co-ordinate our activities. We are working to develop interactive sites that facilitate communication, compliance with SQA requirements, and enhance code development.

REQUIREMENTS

In ascertaining the requirements for the Web site, we had considerable experience with various online systems. Many members within the Reactor Core Physics Branch collaborate on different projects and are familiar with online document collections used by these groups, including the Y2K SciCode Web site. In addition, the Branch has had its own online document collection that has evolved over the years. As a result of this experience, we were able to define the major requirements for the RFSP Web site in terms of use, security, quality control, and content.

Use

After considering our user's needs, administrative needs, and future directions we already envisaged, we determined that the site had to be -

- easy to navigate and intuitive for occasional users;

- easy to administer: maintain, manage, and update;

- reliable and dependable;

- flexible, adaptable to changing requirements;

- portable to other programs if required;

- always available and always current, without compromising data integrity.

The primary requirement was *keep it simple*.

Security

Security issues were assessed in terms of -

- risk from unauthorized access, potential loss of proprietary information to unauthorized individuals;

- risk from accidental loss, such as the potential to overwrite or accidentally change data;

- risk from network problems, disk crashes, etc.;

Permissions, separate directories for different types of information, and reliance on AECL's network backups were considered sufficient to meet the security requirements. AECL's firewall and monitoring procedures as well as the professionalism of AECL staff reduce the risk of unauthorized access or loss of proprietary information to unauthorized individuals. File and directory permissions ensure that documents are not overwritten or changed. Reliance on AECL's official repositories and regular network backups ensure that no document is lost, even if the site itself is lost because of network problems, etc.

RFSP, similarly to CATHENA and several other SciCodes, is an industry-standard program hosted by AECL. The RFSP information posted on the Web site should be available to partners who work outside of AECL. However, this requirement raises other security issues. It was felt that this requires more investigation and resolution by a higher level of management, and was therefore beyond the scope of the individual branch. Until a permanent solution is found, copies of the RFSP Web site will be created and distributed to authorized external users via CD-ROM.

Quality Control

Quality control was evaluated at several levels:

- the Web site itself

- the ongoing maintenance of the site

Three major decisions regarding quality control were reached:

a) *The Web site would be released in stages*:

   1) to a limited number of individuals for review and clarification of requirements and content;

   2) to the SciCode development and qualification teams and selected users for testing;

   3) to all of AECL;

   4) to external customers.

   Formal documentation would be required at every stage. Formal review and sign-off, including formal disposition of review comments, would be required prior to authorized release of the site.

b) *The Web site would not replace AECL's official repository for documents.*
Full-scale information management of the site itself or automated quality controls regarding data entry would not be implemented. Documents could be stored in "native format" (i.e., left in MS Word, EXCEL, etc.) so as to facilitate re-usability.

c) *Changes to the site would be implemented in a systematic way.*
Changes to the Web site will be suggested by reviewers and users. Corrections would be made as soon as errors were reported; changes, however, would be documented and implemented in new releases of the site.

Content

To determine what information should be on the site, we returned to our original illustration of a new user. We asked what information would such a user need to become "comfortable" running a SciCode.

Information was categorized in terms of sensitivity and access privileges:

- *General information* should be available to everyone. This includes non-proprietary information, such as upcoming seminars or conferences, as well as more detailed information that has already been published in journals or presented at conferences;

- *Restricted information* should be available to authorized or registered users. This includes support information about test data, program limits, change requests as well as official documentation, and detailed information about the SciCode itself;

- *Administrative information* required to maintain the site. This includes user password lists, source documents and databases, forms, scripts, and a document storage area and should not be available to authorized or unauthorized users.

In addition, the possibility of an area for development information that could be accessed only by the SciCode development and qualification teams was also envisaged, to be considered at a future time.

Information was also categorized in terms of whether it was static or dynamic.

- *Static information* was put directly into HTML;

- *Dynamic information*—information that would be frequently updated—was put into MS ACCESS databases where it could be queried or updated through Web interfaces.

To make the Web site more "user friendly", we decided to create a generic interface that did not require knowledge of special programs or applications either by visitors to the site or by the administrators, who may be unfamiliar with MS ACCESS.

CAPABILITIES

The **primary purpose** of the Web site was defined as "improved communication". We evaluated the requirements for the Web site against this purpose and ascertained that the Web site, as envisaged, would provide important and useful information *to* users should they visit it. We then focused on what was necessary to encourage communication *from* users.

An Interactive Environment

Picture yourself as the Primary Holder responsible not only for developing the SciCode program, but also for managing it. The administrative requirements are daunting. Not only are you responsible for configuration management of the program and relevant documentation; you are also responsible for maintaining a current list of authorized users, and for recording, tracking and reporting all changes to the program since the last authorized release. If only there were a way to deal with the administrative requirements easily, quicky, and without having to copy or recreate data.

A few years ago, when AECL initiated a new phase in its SQA program, procedures were revised so as to comply with the newly-released CSA N286.7-99 Standard. New requirements were identified and new processes were developed. We were challenged by the RFSP Primary Holder within the Reactor Core Physics Branch to investigate whether it was possible to use the Web site as a way to facilitate compliance with CSA Standard.

Complying with SQA Standards

We reviewed CSA N286.7-99 (Reference [1]) and AECL SQA procedures and defined ways through which the SciCode Web sites could facilitate compliance with their requirements. Note, the SciCode Web sites do not actually meet compliance with these standards or procedures. Rather, they provide a way to simplify various processes which are designed to meet SQA requirements, and offer an interface between the Primary Holders / End Users and whatever configuration management / information-management system exists.

Some of the ways in which we facilitate compliance:

a) *Version and Data pages.* These pages identify the official version of a SciCode and direct users to the location of the authorized executable of the program. The Version pages document the relationship between configuration versions and identify the modified computer program components, description of changes, dates of new releases, and reference to documents containing more detailed information where appropriate. The Data pages direct users to the authorized executable, and to verification data. Users are able to verify the execution of a SciCode following transfer of the program to a new location or prior to using the SciCode from a new computer platform;

b) *Events and Feedback pages.* The Events page informs users of upcoming training sessions while the Feedback page allows users to request training in specific areas or components of the SciCode;

c) *Restricted pages.* These pages are accessed through a locally-controlled password system. Using them, the Primary Holder is able to create and maintain a current list of authorized users;

d) *Bulletin page.* This page allows the Primary Holder to inform Users about new developments in the computer program;

e) *Limits page.* This page allows the Primary Holder to inform about limits to the program, i.e., parameters or boundaries beyond which the applicability of the program has not been established;

f) *Nonconformance pages.* These pages allow Users to inform the Primary Holder of errors or deficiencies in the SciCode or related documentation, and to view the status of activity relating to the nonconformances they have previously identified. The Primary Holder is able to link this information to the Change Control pages;

g) *Documentation pages.* Important documentation, such as the User's Manual and various papers or presentations, is available to the Development Team and Users through the Documentation sections of the Web Sites;

h) *Change control pages.* The Primary Holder uses these pages to enter and retrieve information necessary relating to the purpose, design, and execution of changes to a SciCode.

The SciCode Web sites began with a mission statement to improve regular ongoing communication between the Primary Holder and End Users. The SQA standards include requirements regarding feedback and comment. This information must be captured, tracked, documented and made available when required. By making the SciCode Web sites interactive and keeping them current, AECL has developed a medium to meet these additional requirements easily, with administrative simplicity.

Work Simplification

Administrative simplicity was one issue that emerged in our discussions with the RFSP Primary Holder. Before the implementation of the CSA N286.7-99 Standard, changes to some of our SciCodes, such as RFSP, were automatically tracked through the revision control system (RCS) software (Reference [2]), and problems with the program documented through a centralized system which is used for the majority of SciCodes. The revised software standards, however, require information in addition to what is available through RCS. This additional information is currently collected manually. For a minor SciCode requiring few changes per year, the manual effort is negligible. For a code under development, with up to several hundred changes per year, the additional labour can extend over several months. The RFSP Primary Holder challenged us to simplify this administrative process, thereby allowing him more time for code development and safety analyses.

We had already designed queries for pulling out change-request information, and forms to allow users to submit change requests electronically so we were already involved in the process. Our experience with databases and Web-based queries gave us the capability to pull the different components together. It was decided to eliminate the centralized system, so that all problems would be tracked at the individual SciCode level.

Problems and change requests can be easily handled through the RFSP Web site. The Primary Holder can access the database through special queries and forms in the administrative area, update the information as required, and print out the information from the database onto any number of AECL forms, or export it into MS Word and incorporate it into reports. The data generated automatically in RCS can be used to verify that the content of the database is accurate and complete.

The net result is that it is now possible to enter the information once, retrieve it, add to it, or update it as needed, and export it into whatever format is required, instead of having several different programs in different locations tracking the same kind of information.

A second benefit to having the entire change-control process for RFSP managed at the local level is that all the information is in one location, accessed through one reference point - the RFSP Web site. When we issue the Web site to external customers, it is a simple matter to copy the entire location onto a CD-ROM, or, at some future point, to make it accessible through a common Extranet—without risk to AECL security or loss of intellectual property, and with a corresponding reduction in labour costs.

Documentation

We intend to make important documents available online: particularly the User's Manual for each SciCode. Web technology, with its hypertext capability, provides readers with the ability to navigate easily, even intuitively, through these documents. Instead of hunting through a thick hard-copy manual for specific information, users are able to search electronically and to navigate from the table of contents to specific sections of interest to them. The OPGI RFSP Web document provides an in-depth software program description that allows users to search for information on specific modules, pull up relational charts that depict all subroutines and variables within any given module, view flow charts that capture the calculational process for the specific module or subroutine, and check the data dictionary for specifics on each variable in the program. It is an impressive Web document that transforms what we even consider documents to be or how we think they should be viewed. Through its intense use of hypertext links and scripts, this document appears almost intuitive to the user. Future documents may be modelled along similar patterns but they do require considerable resources and expertise in their creation.

Marketing

The SciCode Web sites have other potential as well. One area is marketing. When dealing with potential customers, we need to demonstrate how our product works. SciCodes are one of our products. Until now, we keep marketing staff aware of the capabilities of our programs, and have made Primary Holders available at all times to answer questions from potential customers. Several rounds of questions often exist, with the earlier rounds serving, in some ways, more as an introduction to the different SciCodes.

The SciCode Web site simplifies the whole process. Marketing people have something concrete to demonstrate and have access to general information about the SciCode itself. For example, potential customers can be given copies of the public Web site - or in time, be directed to the SciCode's URL (Uniform Resource Locator, the standard way to give the address of any resource

on the Internet that is part of the World Wide Web (WWW)). They can then navigate through the Web site at their convenience, investigate the SciCodes they are most interested in, and have their basic questions easily answered. When they do have questions for the Primary Holders, the questions will already reflect a basic understanding of the program and be focused into specific aspects of the code.

FUTURE DIRECTIONS

So far, we have discussed aspects of the Web site that already exist or are in the process of being implemented.

As people begin to use the existing Web sites, new ideas and uses for the sites are suggested. Where possible, we incorporate them into existing Web sites. Where it is not possible because of technical or administrative issues that need to be resolved first or due to various constraints on our resources, we note them for the future.

The following are some of the directions and potentials we see for the SciCode Web sites.

Web Sites for Industry-Standard Tools

Approximately 20 SciCodes have been identified as Industry-Standard Tools. We would like to create similar Web sites for all -IST programs, and work is already well under way on several of them. The Code Management Panel and Code Centre are developing a unified approach for SciCodes throughout AECL and recognize that a unified approach for SciCode Web sites is also required. The Code Centre is currently defining its mandate with respect to the SciCode Web sites, determining what level of administrative support and technical assistance is required in the creation of the sites, and investigating the possibility of hosting the pages on its own server. This in no way detracts from the responsibilities of the individual Primary Holder or Owner Branch with respect to SciCodes. Ultimate responsibility continues to remain at the local level since it is the individual Primary Holder or Owner Branch who is most familiar with the SciCode. What the Code Management Panel, through the Code Centre, offers is a co-ordinated approach and resolution of issues that extend beyond an individual Branch.

Formal Information Management

Web technology is designed for information sharing. We would like to incorporate formal information management into the SciCode sites. One advantage would be better control of the documents available to users. A second advantage is based on the recognition that SciCode sites must be available to users outside of AECL. While acknowledging the importance of official repositories and their role in safeguarding AECL's intellectual property, we need to also acknowledge their limitation with respect to SciCodes that must be available to users within and external to AECL, and which, in fact, may be in part owned by external sources. If we rely solely on AECL's official information management programs and processes with respect to documentation, then it becomes more difficult to copy information over or otherwise make it accessible to external customers. The information that needs to be shared must first be "disentangled" from the rest of the AECL information network. By building individual

information management structures for each SciCode, it becomes easier to transfer documentation about individual programs to whoever is authorized for it.

Training

An important aspect of SQA is to ensure that the users of our SciCodes are trained in their use. Considerable training documentation on SciCodes does exist and is being collected and integrated into the online documentation of the different SciCodes. Given sufficient time and resources, we would like to create a truly interactive training program for the major SciCodes, but acknowledge this is a longer-term goal.

Code Development and Creation of Documentation

Although SciCode development and the creation of Web-based documents are not generally included in people's views of a Web site's potential, they offer the potential of including users in the different phases of developing a SciCode and its documentation.

The SciCode Web site has been designed to encourage communication. We should expect improved communication to revolve around not only problems with either the SciCode or related documentation but also around suggestions for improvements, simplifying processes, modifying a comment line, rewriting a paragraph or section in a manual.

If the SciCode Web sites really do facilitate and improve communication between Primary Holder-Owner Branches and End Users, we should expect, and be ready for, more involvement in the development of any SciCode, by the users themselves.

Development Area and "Chat" Area

Within the structure of the SciCode Web site shared areas have been created to allow users to access different information and documentation. It is possible to create similar shared areas that are still connected to the Web site in some way for the code development teams.   These areas may serve as information-sharing repositories or even "chat" rooms. Currently, such shared areas are independent of the Web site and exist only for AECL members of the code development team. When the Web site becomes available to non-AECL members, it will be possible to create shared areas for all members of the code development team, and thus become the communication hub of code development.

Ongoing Issues

Of course, issues exist that must be resolved. Most of these exist beyond a Branch level, and must dealt with either by the Code Management Panel and Code Centre or in conjunction with other groups within and external to AECL.

Administrative issues: We need to determine which documents are to be made available to which groups and what level of review and signoff is required. We need to provide for ongoing maintenance of individual sites in order to ensure that information is always current. We need to

deal with information management, ensuring that whatever AECL documentation is stored on the SciCode Web site, is also found in AECL's official information management system, and that security issues surrounding non-AECL documentation have been addressed.

Technical issues: The most important and immediate issue deals with making Web sites for the IST SciCodes available online to external customers without compromising AECL security or intellectual property. This must be resolved through negotiations with the AECL Code Management Panel, IT and external customers.

Publicity: We already had configuration management, information or documentation management and quality-assurance programs at AECL. We believe we now have the capability for easily providing regular ongoing communication between Primary Holders-Owner Branches and End Users through the SciCode Web sites. The next step is to make the users aware of their existence. Certainly seminars and conferences, such as this one, are one way to publicize the sites. Certainly we are trying to channel all activity with respect to CATHENA or RFSP through the CATHENA or RFSP Web sites and to encourage the other SciCode Primary Holders to do the same with their sites. We will succeed only insofar as we achieve our original mission statement:

The primary purpose of the SciCode Web site is to provide required information for people who need it when they need it, and in a form that they can easily retrieve and use.

CONCLUSIONS

Picture yourself as a new user of a SciCode. You have been directed to a Web site where you are able to familiarize yourself with the SciCode's functionality and general capabilities. You register with the Primary Holder through the Web and gain access to the secure support area. You now have access to a basic interactive training course, as well as to introductory documents on the SciCode. You are walked through the User's Manual, directed to the location of the official executable of the program, and have access to test data so that you can begin using the program and verifying your results. You can check the parameters of the program, find out some of the frequently asked questions regarding the SciCode, have the opportunity to submit your questions based on what you have learned so far, and schedule yourself for training in a specific part of the program.

Picture yourself as the Primary Holder. You are able to check and update the various database tables on a regular basis, add new documents, maintain a list of authorized users, and provide training geared to their specific requirements, questions, and suggestions. You are able also to extract information from the databases in a variety of formats, link to AECL's official repository, even run the code from the Web Site. You have a working environment where you and external customers can share ideas, and where you are actually able to access external documents relating to your SciCode.

We, at AECL, have created a SciCode Web site that provides easy two-way communication between the Primary Holder- Owner Branches and End Users, including potential customers. This Web site facilitates compliance with SQA procedures, simplifies and streamlines various work processes, and improves comprehension of the various components and modules within a

given SciCode, provides access to training and relevant documentation, and points to where the program executable actually exists. All this can be done from one URL.

ACKNOWLEDGEMENTS

REFERENCES

[1]   CSA N286.7-99, <u>Quality Assurance of Analytical, Scientific, and Design Computer Programs for Nuclear Power Plants</u>, ISSN 0317-5669, 1999 March.

[2]   D. Bolinger & T. Bronson, <u>Applying RCS and SCCS</u>, O'Reilly & Associates, Inc. Sebastopol, CA, 1995.